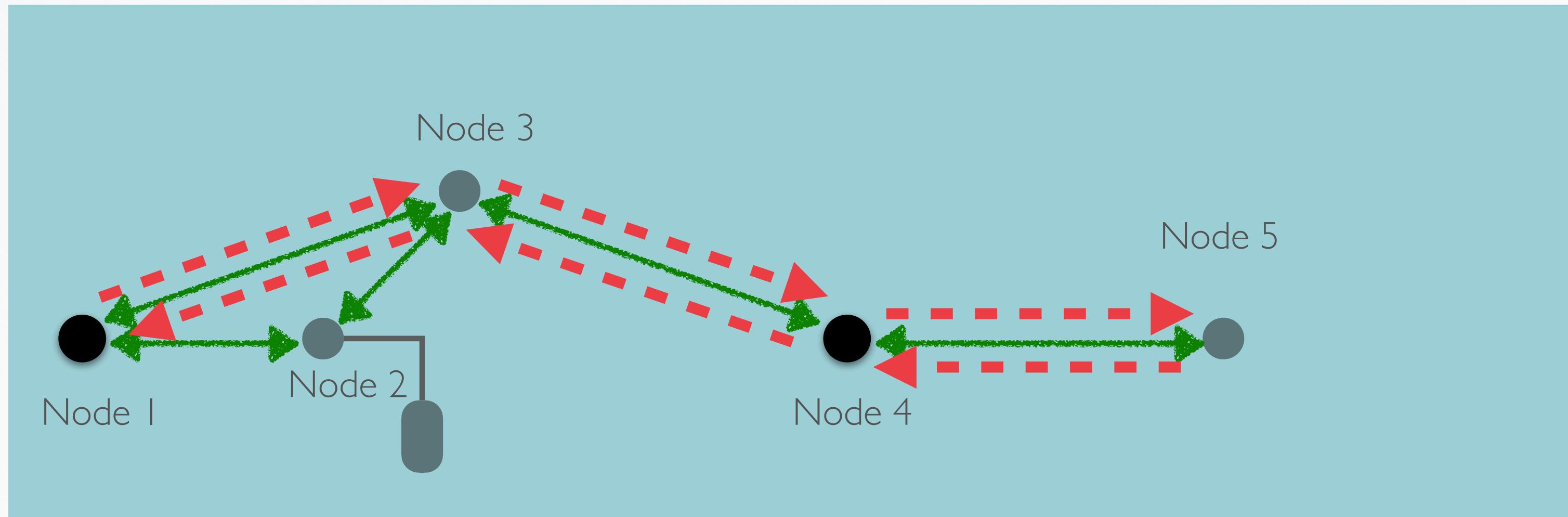


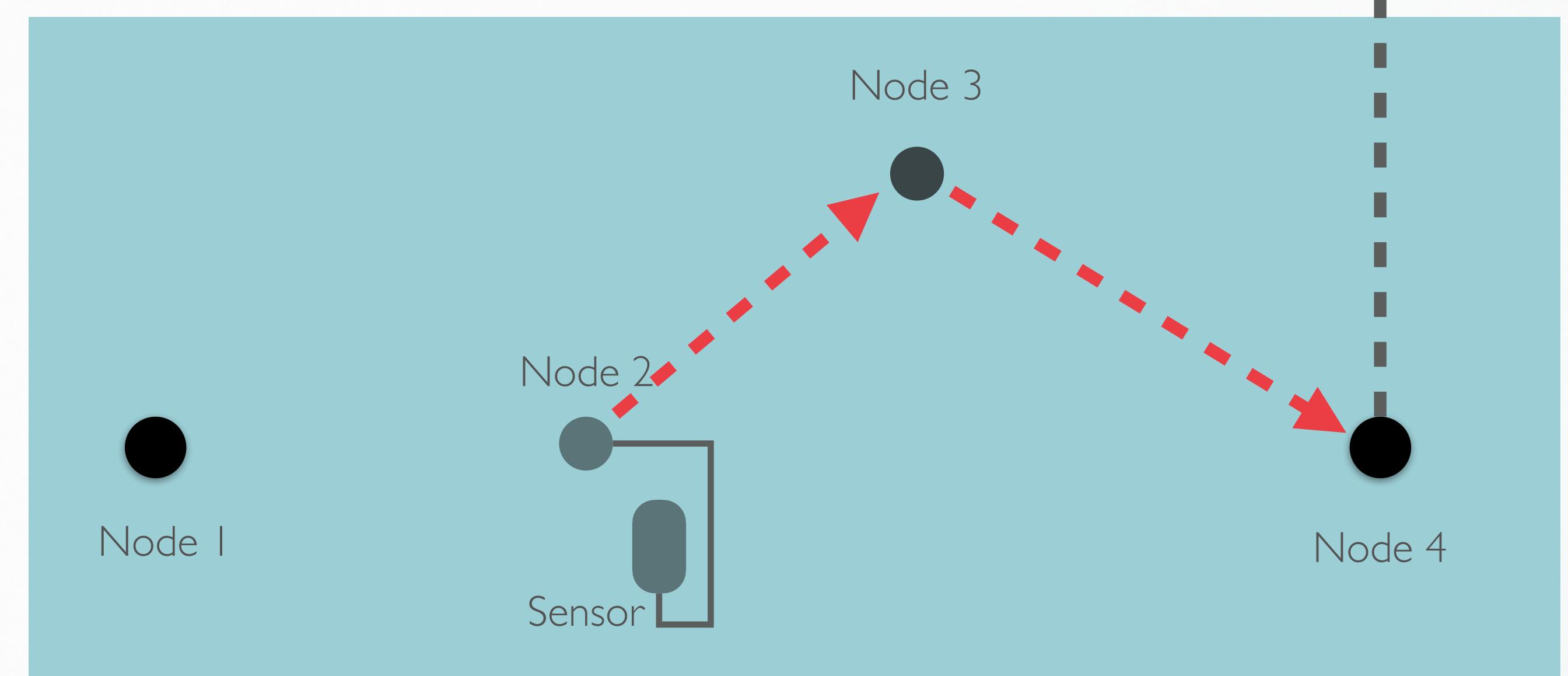
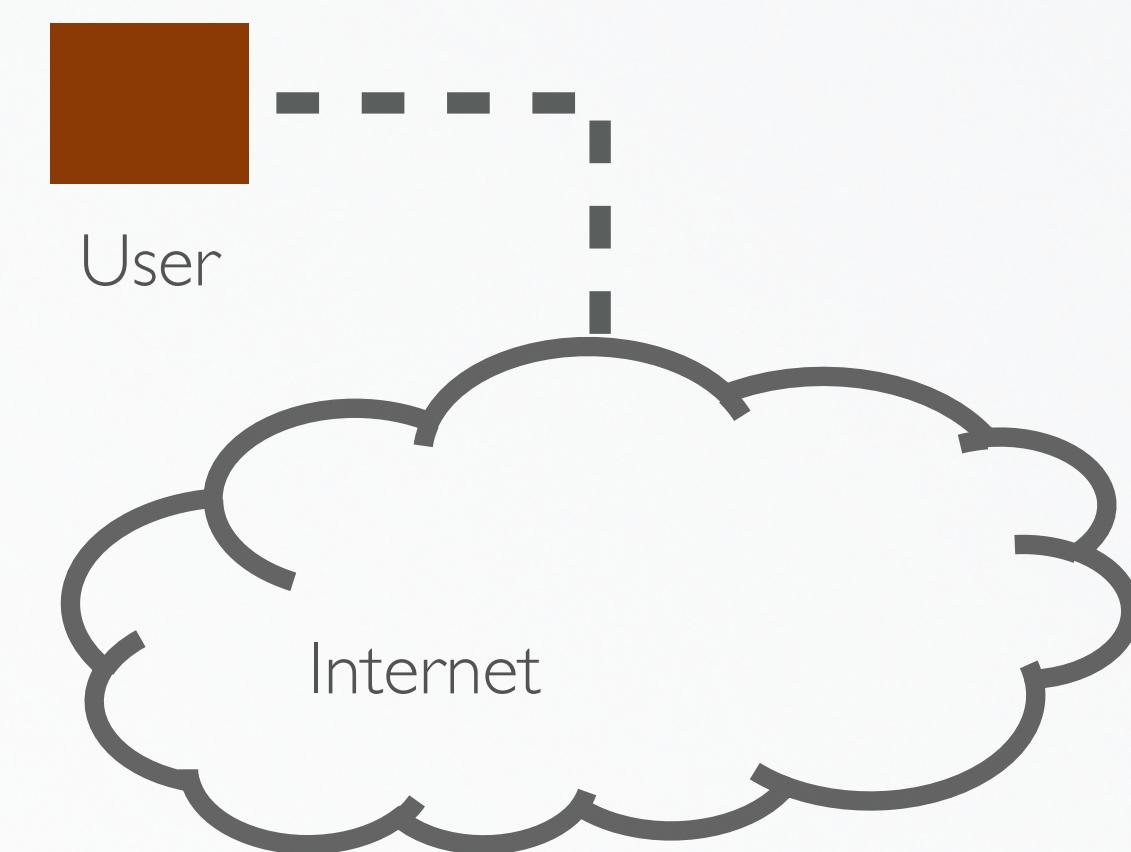
PART 5 - LOCALIZATION

WHAT HAVE WE LEARNT SO FAR ?



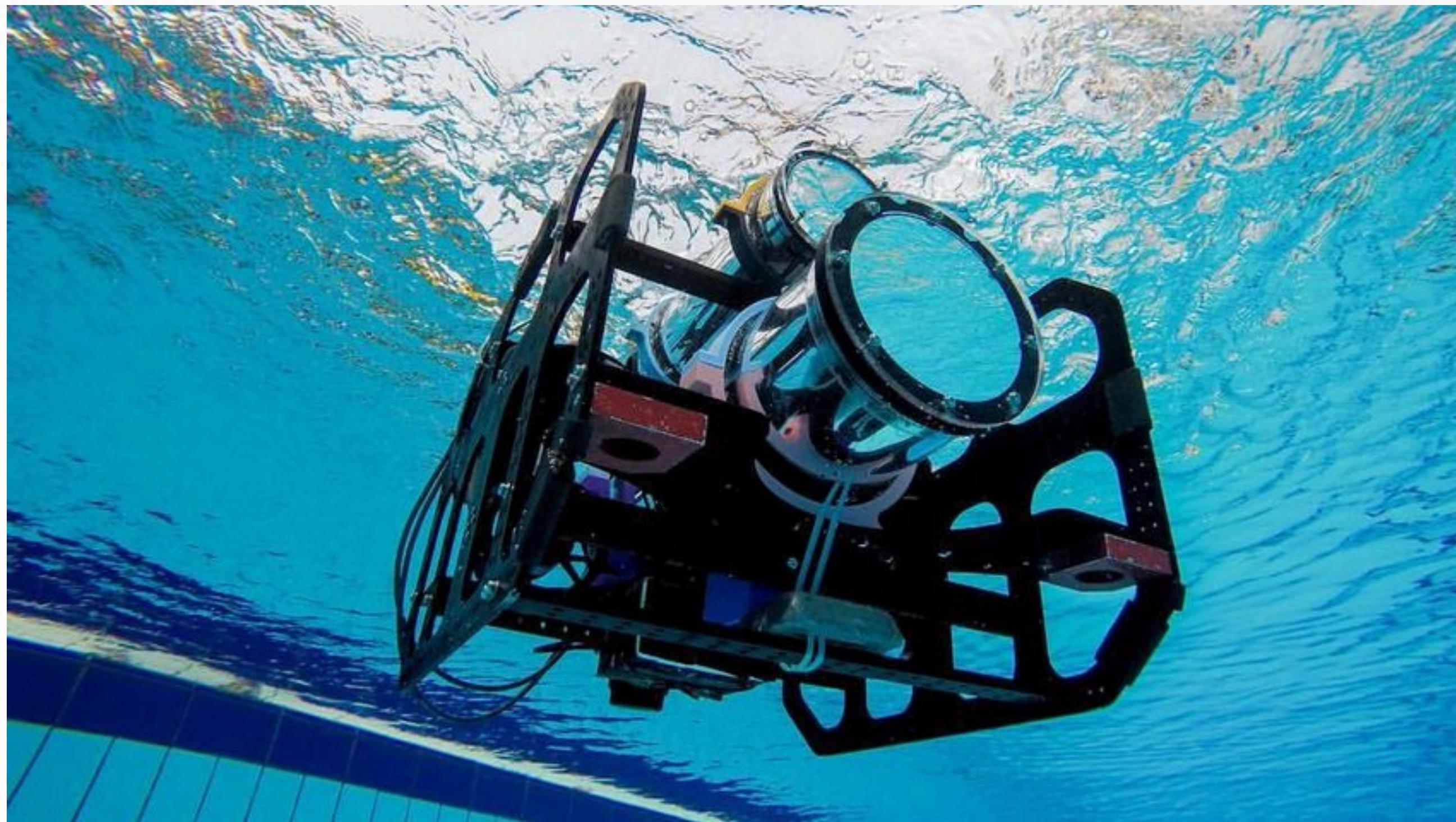
Connectivity over **multi-hop links**
by adding routes

Getting data from **sensor** to a
node connected to the **Internet**



LOCALIZATION

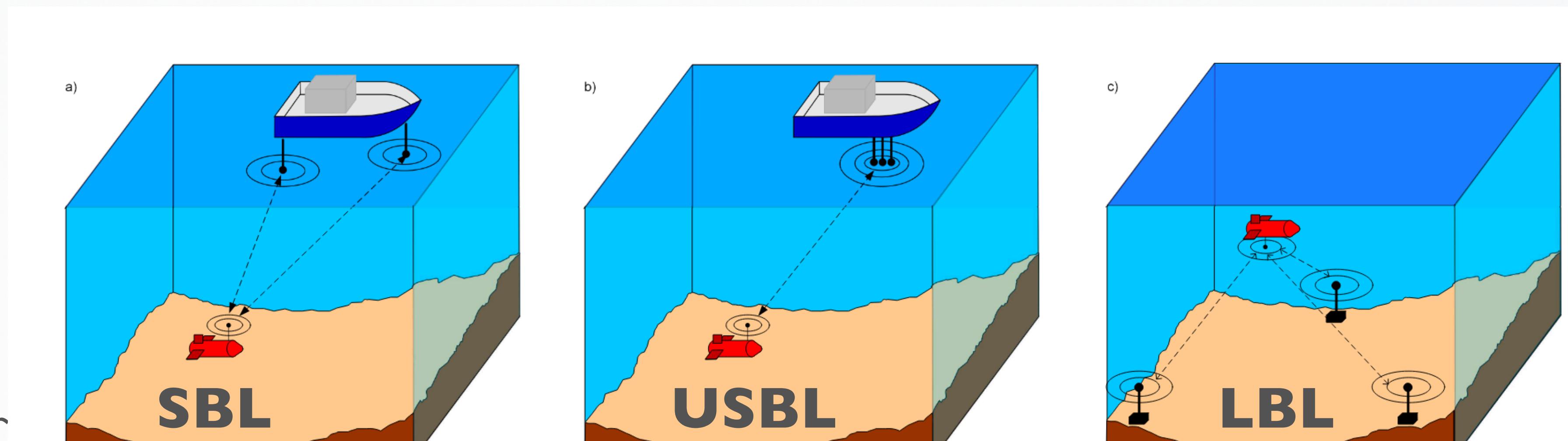
- Underwater mobile robotics is on the rise
- Many commercial and research applications
- Localization and tracking a must for enabling useful applications



Credit: SAUVC 2019

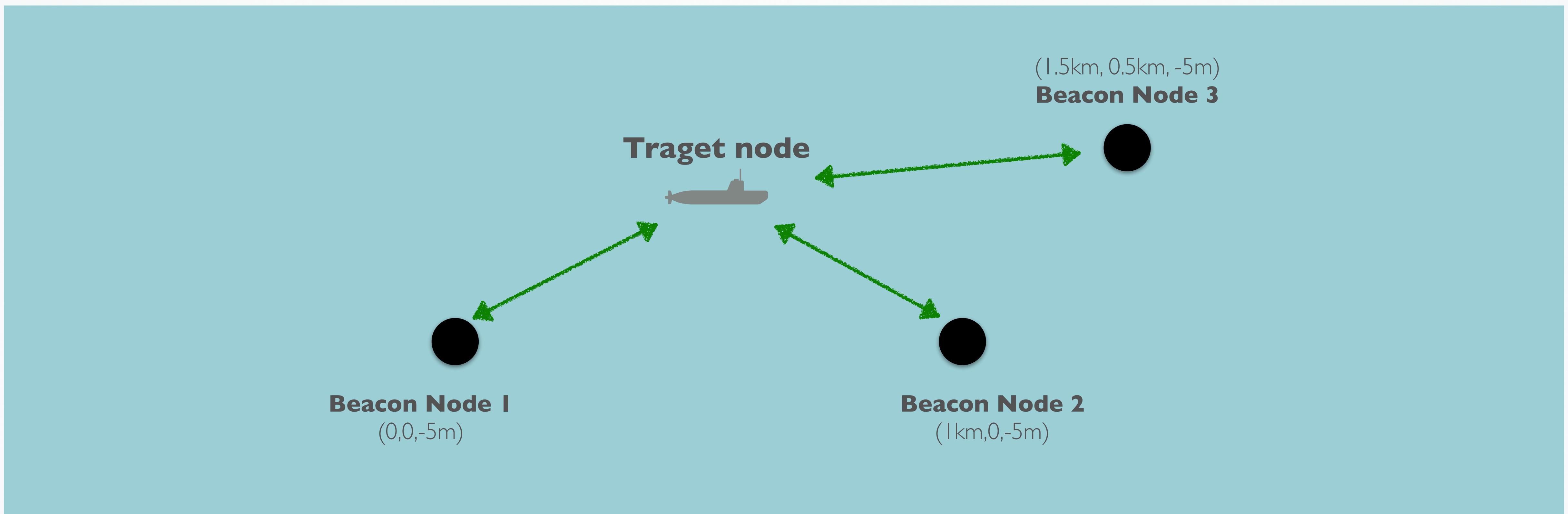
TYPICAL CONFIGURATIONS

- LBL / SBL / USBL
- Beacon nodes
- Target and a tracker



Credit: Paull, Liam, Sajad Saeedi, Mae Seto, and Howard Li. "AUV navigation and localization: A review." *IEEE Journal of Oceanic Engineering* 39, no. 1 (2013): 131-149.

TRACKING A MOBILE NODE

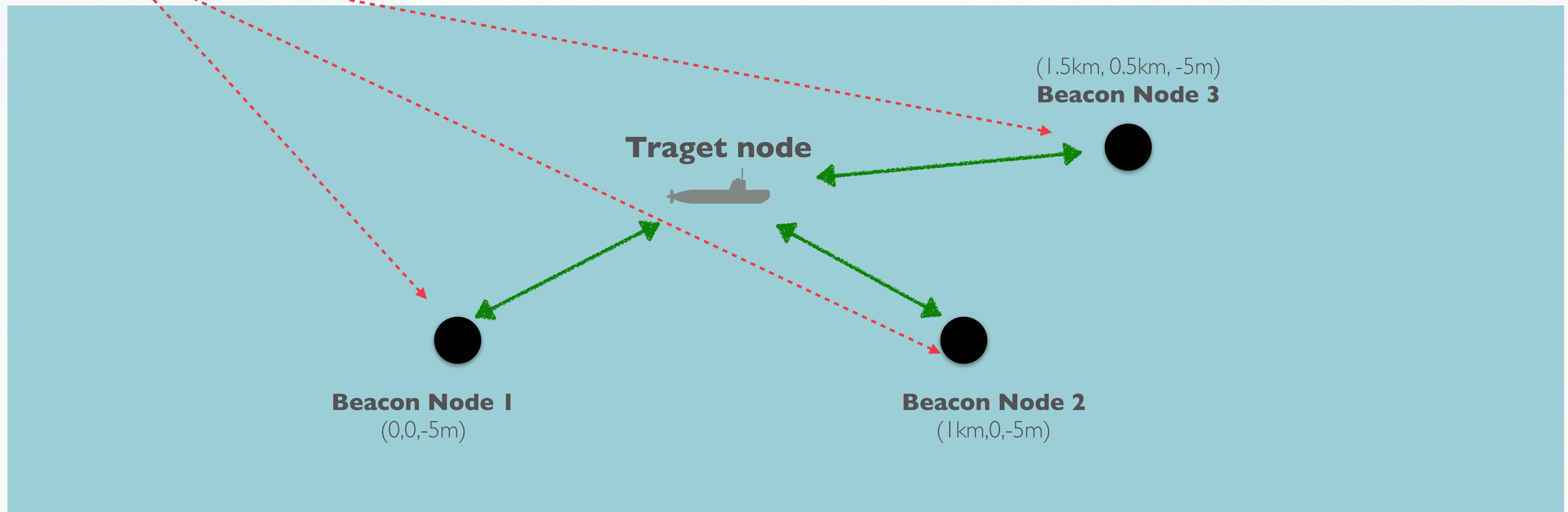


Tracker

User Application
e.g. Python



TRACKING A MOBILE NODE

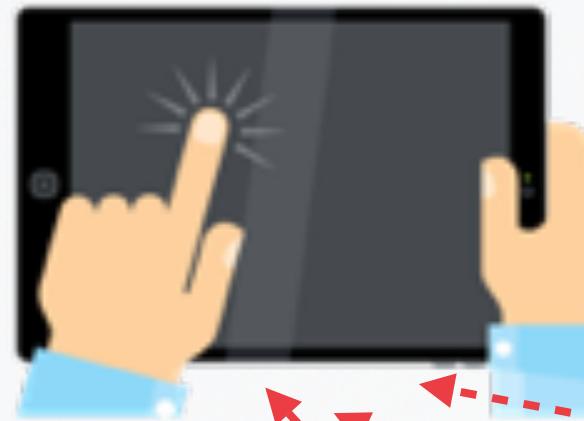


A faint, grayscale network graph serves as the background for the title. It consists of numerous small, dark gray dots representing nodes, connected by a dense web of thin, light gray arrows pointing in various directions, suggesting a complex system of interactions or data flow.

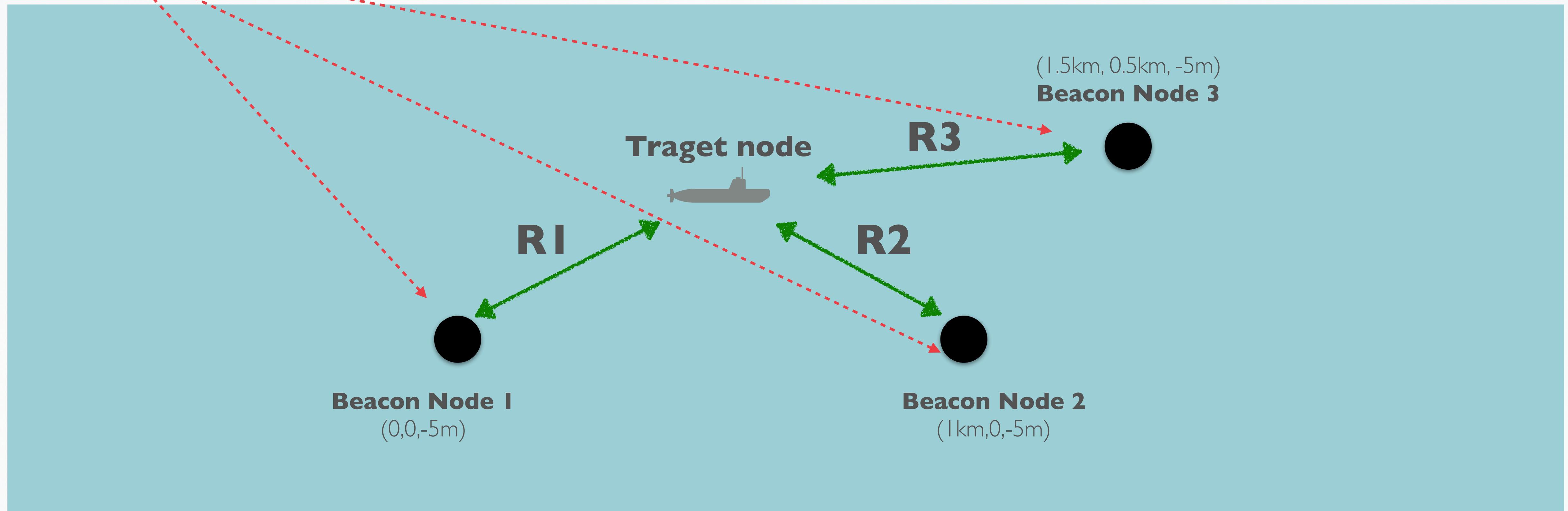
DEMO 5.I

Tracker

User Application
e.g. Python



MEASURE DISTANCES



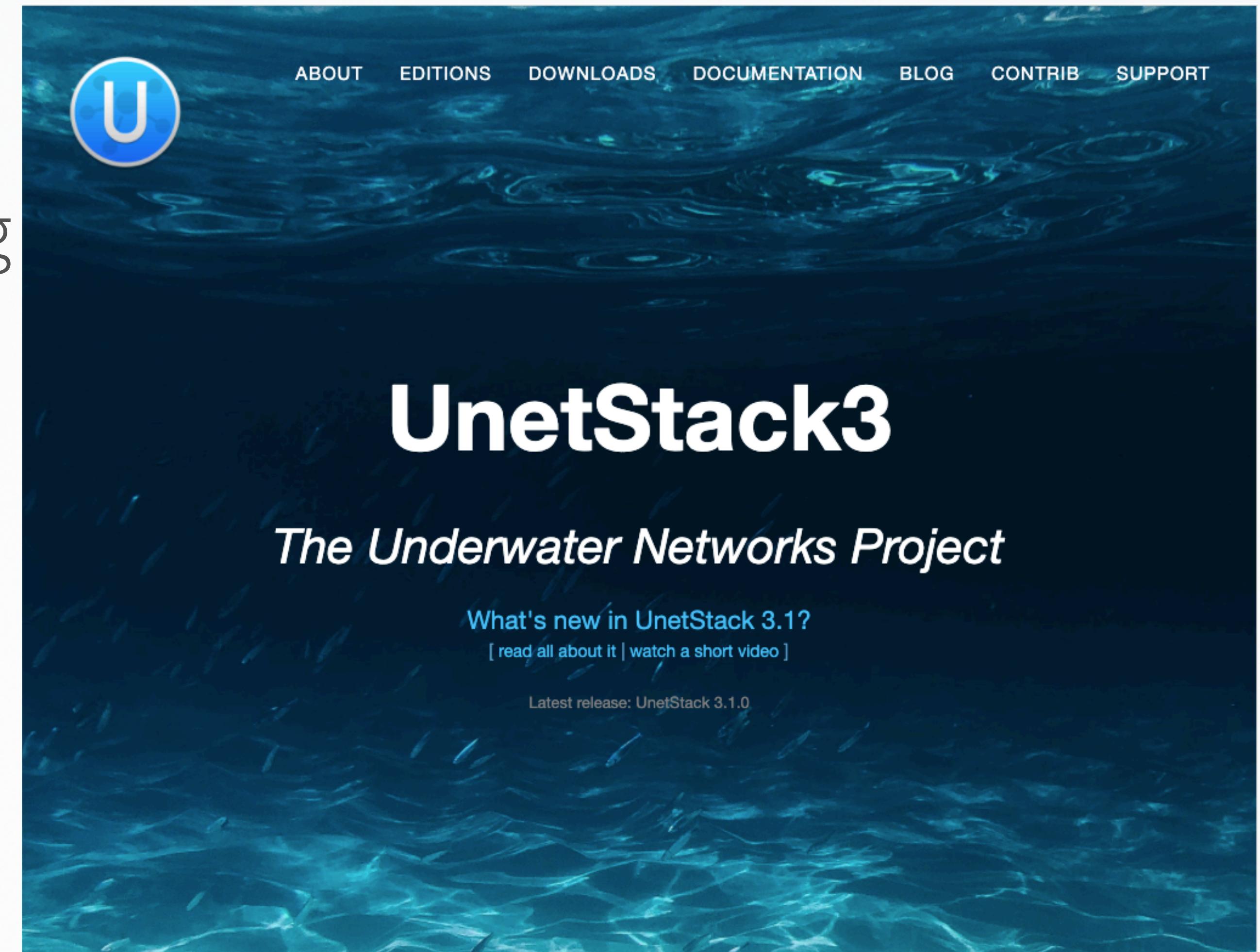


The background of the image features a complex network graph composed of numerous small, semi-transparent grey nodes and a dense web of thin grey lines representing connections between them. The graph is centered and covers most of the frame, creating a sense of data density and connectivity.

DEMO 5.2

HANDS ON SESSION 5

- Try out Demo 5.1 and 5.2 using UnetStack
- Ask questions in the chat
- <http://subnero.com/oceans20>



NEXT...

- Part 6 : Let's meet and conclude this tutorial

Visit <http://subnero.com/oceans20> for slides, code examples and other resources from this tutorial